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Bengt Lindoff

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EXAMINER

TAYONG, HELENE E

ART UNIT

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NOTIFICATION DATE

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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

tammy@ppglaw.com

Office Action Summary	Application No. 10/700,855	Applicant(s) LINDOFF ET AL.	
	Examiner HELENE TAYONG	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 15-19 and 21-32 is/are rejected.
- 7) ☒ Claim(s) 12-14 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the amendment filed on 4/24/08.

Claims 1-32 remain pending in the application. Claims 1-3, 9, 2-4, 7, 20, 25-27, and 30-32 have been amended without introduction of new matter. Claims 1-32 are pending in this application and have been considered below.

Response to Arguments

2. (1) **Rejection or claims 30-32 under 35 U.S.C. § 101**

Applicant's arguments with respect to claims 30-32 rejected under 35 U.S.C. 103(a) as being unpatentable over Tirola et al (US20040076132) in view of Wang (US 20060154633) and further in view of Langberg et al (US 5852630). The rejection of claims 30-32 under 35 U.S.C. § 103(a) as allegedly being directed to non-statutory subject matter has been withdrawn.

(2) **Rejection or claims 1, 4-14, 16 and 17-29 under 35 U.S.C. § 103**

Applicant's arguments with respect to claims 1, 4-14, 16 and 17-29 [sic: 17-25 and 27-29?] that the inclusion of claim 26 in the Office's stated list of claims subjected to this ground of rejection was made in error at least because claim 26 is not discussed in this part of the Office Action; have been fully considered and are persuasive. The inclusion of claim 26 in the Office's stated list 17-29 under 35 U.S.C. § 103 has been withdrawn.

(3) **Rejection or claims 1 and 25 under 35 U.S.C. § 103**

Applicant's arguments with respect to claims 1 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tirola et al (US20040076132) in view of Wang (US 20060154633) have been considered but are moot in view of the new ground(s) of rejection because of amendments.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 4-11, 16-19, 21-25, 27-30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tirola et al (US20040076132) in view of Wang (US 20060154633) and further in view of Jalloul et al (US 7251497).

(1) with regards to claims 1, 25 and 30;

Tirola et al in (figures 1-3) discloses a (method /apparatus/computer program) of estimating interference (see abstract) in a terminal in a code division multiple access communication system (figure 1, page 2, [0032]), in which a pilot channel uses a scrambling code and the terminal uses an alternative scrambling code on a dedicated channel determined by a channelization code (page 3, [0040]-[0046]), comprising the steps of:

estimating the interference by determining a variance of symbols in a portion of the dedicated channel (fig. 2, 204 and page 3, [0050]-[0058], page 4, [0070]).

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching

(a) determining an empty channelization code m under the alternative scrambling code;

(b) using the empty channelization code m for estimating the interference;

(c) estimating the interference by determining a variance of symbols in at least two portion of the dedicated channel.

(i) with regards to item (a) above;

However, Wang in the same endeavor (CDMA system) discloses (determining an empty channelization code m (fig. 7, 28) under the alternative scrambling code (fig.4-6) (page 3, [0043]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Wang in the method of Tirola et al in order to improve the accuracy of the SINR estimation, and especially of the interference plus noise estimation, without requiring any changes to existing standards (page 1, [0005]).

(ii) with regards to item (b) above;

However, Wang in the same endeavor (CDMA system) discloses using the empty channelization code m for estimating the interference (see abstract, figure 7, 32 and page 3, [0043]-[0046]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Wang in the method of Tirola et al in order for high accuracy of the IN estimation (page 1, [0008]).

(iii) with regards to item (c) above;

However, Jalloul et al in the same endeavor (calculating SIR in CDMA system) discloses in (fig.1) estimating the interference by determining a variance of symbols in at least two portion of the dedicated channel (fig. 1, UL-DPDCH/DPCCH, fig. 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Jalloul et al in the method of Tirola et al as modified by Wang in order to estimate the signal-to-noise variance of the received signal and used to solve signal power and interference power (col. 1, lines 29-34).

(2) with regards to claim 4;

Tirola et al further discloses wherein the dedicated channel is a dedicated physical channel (DPCH) (page 3, [0046]) and the pilot channel is a common pilot channel (CPICH) (page 3, [0040]-[0043] and [0046]).

(3) with regards to claim 5;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the empty channelization code m is determined based on either information of such an empty code or identification of the empty code.

However, Wang in the same endeavor discloses determining an empty channelization code m based on either information of such an empty code or identification of the empty code (see abstract, fig. 7, 28 and page 3, [0043]-[0046]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Wang in the method of Tirola et al in order to determining an empty channelization code m based on either information of such an

empty code or identification of the empty code. The motivation to utilize the method of Wang in the method of Tirola et al would be for high accuracy of the IN estimation (page 1, [0008])

(4) with regards to claim 6;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the information of the empty channelization code m is included in a message sent to the terminal.

However, Wang in the same endeavor discloses wherein the information of the empty channelization code m is included in a message sent to the terminal (figure 10 and page 4, [0052]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Wang in the method of Tirola et al in order to show that the information of the empty channelization code m is included in a message sent to the terminal. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference.

(5) with regards to claim 7;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the information of an empty channelization code m is included in a specification of the communication system.

However, Wang in the same endeavor implicitly discloses wherein the information of an empty channelization code m is included in a specification of the communication system (page 3, [0038]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the teaching of Wang in the method of Tirola et al in order to implicitly show that the information of an empty channelization code m is included in a specification of the communication system.

(6) with regards to claim 8;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the information of an empty channelization code includes channelization codes used by a common control channel.

However, Wang in the same endeavor discloses wherein the information of an empty channelization code includes channelization codes used by a common control channel (fig. 7, fig. 5 and page 3, [0039]-[0040]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the teaching of Wang in the method of Tirola et al in order to show that the information of an empty channelization code includes channelization codes used by a common control channel. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference.

(7) with regards to claims 9, 17, 21, 27 and 32;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein identification of the empty channelization code m comprises the steps of: generating an initial interference estimate (I-estimate);

setting a threshold based on the initial I-estimate;

selecting a candidate empty channelization code;
for the candidate empty channelization code, forming an I-estimate; comparing the formed I-estimate to the threshold; and
if the formed I-estimate exceeds the threshold, selecting another candidate empty code and repeating the forming and comparing steps,
otherwise identifying the candidate empty code as the empty channelization code.

However, Wang in the same endeavor (CDMA system) discloses in figure 10, a method which estimates the power of a desired channel using its channelization (fig. 10 and page 4, [0052]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the search method of Wang in the method of Tirola et al in order to yield a good estimate of the interference.

(8) with regards to claims 10 and 18;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the initial I-estimate is based on a variance of symbols in a signal received by the terminal.

However, Wang in the same endeavor discloses wherein the initial I-estimate is based on a variance of symbols in a signal received by the terminal (page 3, [0042]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Wang in the method of Tirola et al in order to show that the information of the empty channelization code m is included in a message

sent to the terminal. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference.

(9) with regards to claims 11 and 19;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the threshold is set as the initial I-estimate.

However, Wang in the same endeavor implicitly discloses in (fig. 7, a selector (28)) that searches for and selects an idle channelization (see abstract, and [age 3, [0043]-[0046]]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the search method of Wang in the method of Tirola et al in order to explicitly show the steps wherein the threshold is set as the initial I-estimate. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference.

(10) with regards to claim 16;

Tirola et al further discloses wherein the estimated interference is used for estimating a signal-to-interference ratio (page 3, [0046]).

(11) with regards to claims 22 and 28;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein a threshold is derived from the initial I-estimate by filtering the initial I-estimate.

However, Wang in the same endeavor implicitly discloses in (fig. 7, a selector (28)) that searches for and selects an idle channelization (see abstract, and [age 3,

[0043]-[0046]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the search method of Wang in the method of Tirola et al in order to explicitly show how a threshold is derived from the initial I-estimate by filtering the initial I-estimate. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference.

(12) with regards to claims 23 and 24;

Tirola et al discloses all of the subject matter discussed above, but for specifically teaching wherein the candidate empty channelization code m is selected based on predetermined code allocation rules as applied in claim 23 and

wherein the candidate empty channelization code m is selected by determining a channelization code used by a channel, locating the used channelization code in a code tree, and choosing as the candidate empty channelization code m a code in the code tree that is remote from the used channelization code.

However, Wang in the same endeavor discloses wherein the candidate empty channelization code m is selected by determining a channelization code used by a channel, locating the used channelization code in a code tree, and choosing as the candidate empty channelization code m a code in the code tree that is remote from the used channelization code (fig. 5 and 6 and page 3, [0039]-[0042]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Wang in the method of Tirola et al in order to teach wherein the candidate empty channelization code m is selected by determining a

channelization code used by a channel, locating the used channelization code in a code tree, and choosing as the candidate empty channelization code m a code in the code tree that is remote from the used channelization code. The motivation to utilize the method of Wang in the method of Tirola et al would be to yield a good estimate of the interference.

(13) with regards to claim 29;

Tirola et al further discloses wherein the terminal complies with a standard for a universal mobile telecommunications system (UMTS) (also known as W-CDMA), (fig. 1 and page 2, [0025] and [0032]).

5. Claims 2-3,15, 26 and 31 rejected under 35 U.S.C. 103(a) as being unpatentable over Tirola et al (US20040076132) in view of Wang (US 20060154633) and further in view of Jalloul et al (US 7251497) as applied in claims 1 and 25 above, and further in view of Jokinen et al (US 6038238).

(1) with regards to claims 2, 26 and 31;

Tirola et al as modified by Wang and Jalloul et al discloses wherein the variance of symbols is determined by estimating the interference by determining a variance of symbols in at least two portions of the dedicated channel (fig. 1, UL-DPDCH/DPCCH, fig. 5).

Tirola et al as modified by Wang and Jalloul et al discloses all of the subject matter discussed above, but for specifically teaching determining whether the communication system is not using discontinuous transmission (DTX),

However, Jokinen et al in the same endeavor discloses in (fig.4), a method to realize discontinuous transmission (DTX) in a telecommunications network (col. 5, lines 20-36).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the method of Jokinen et al in the method of Tirola et al as modified by Wang and Jalloul et al in order to determine whether the communication system is not using discontinuous transmission (DTX). The motivation to utilize the method of Jokinen et al in the method of Tirola et al as modified by Wang and Jalloul et al would be to reduce co-channel interference and its effect on the communication quality (col. 1, lines 16-18).

(2) with regards to claims 3 and 15;

Tirola et al further discloses wherein the at least two portions include a dedicated physical control channel (DPCCH) (page 3, [0040]-[0043]) and

implicitly discloses a dedicated physical data channel (generally, a dedicated radio link comprises a physical control channel called (DPCCH) dedicated physical control channel and physical data channels called DPDCH (dedicated physical data channel) (DPDCH).

Allowable Subject Matter

6. Claims 12,13,14 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior arts of record Tirola et al (US20040076132) in view of Wang (US 20060154633) and further in view of Jalloul et al (US 7251497) do not disclose wherein the interference is estimated by determining a variance of symbols according to

$$\hat{I}_{DPCH} = \frac{1}{N} \sum_{k=1}^N |a_d(k) - m_d|^2.$$

wherein:

\hat{I}_{DPCH} is an interference estimate for a dedicated physical channel (DPCH);

$a_d(k)$ is a complex amplitude of a k-th sample of a despread received signal d_k ;

N is a number of complex amplitudes; and

m_d is a mean of a number N of the complex amplitudes.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2611

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HELENE TAYONG whose telephone number is (571)270-1675. The examiner can normally be reached on Monday-Friday 8:00 am to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Liu Shuwang can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Helene Tayong/
Examiner, Art Unit 2611

July 1, 2008
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611

Application/Control Number: 10/700,855
Art Unit: 2611

Page 15